

Appl. No. 10/792,228  
Response dated September 14, 2005  
Reply to Office Action of June 14, 2005

Docket No. 5873.38012

## REMARKS / ARGUMENTS

Claims 1-13 and 17-24 are pending in the application. In this response, claim 1 has been amended, and no claims have been canceled or added.

### CLAIM REJECTIONS UNDER 35 U.S.C. § 112, First Paragraph

Claims 1-13 and 22-24 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. This rejection is respectfully traversed.

In support of this rejection, the Examiner states that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. More specifically, the Examiner says that claim 1 and 22, claims "the thermoplastic glue between supplemental hair strands" which was not described in the specification at the time the application was filed.

In exchange for patent rights granted, 35 U.S.C. §112, First Paragraph, sets forth the minimum requirements for the quality and quantity of information that must be contained in the patent to justify the grant. The patentee must disclose in the patent sufficient information to put the public in possession of the invention and to enable those skilled in the art to make and use the invention.

Applicant submits that one skilled in the relevant art would understand that thermoplastic glue is present between supplemental hair strands, and thus the inventor has clearly invented the claimed invention at the time of filing, and has disclosed sufficient information to put the public in possession

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of the claimed invention. As evidence of the sufficiency of the disclosure, Applicant first refers to the specification on page 7 at lines 26-27, which describes a supplemental hair bundle **20** as strands of supplemental hair glued to each other with thermoplastic glue.

In a second portion of the disclosure, on page 8 at line 12, the specification describes **Fig. 3**, which shows an end view of glued portion **30** of hair bundle **20**. As illustrated, glued portion **30** is round, and the ends of strands of supplemental hair are distributed throughout, as represented by the smaller dots within the circle of glue. This figure clearly shows and schematically represents that thermoplastic glue engulfs, or envelopes, or surrounds hair strands, and therefore must be located between supplemental hair strands.

In a third part of the disclosure, the fact that thermoplastic glue is between the supplemental hair strands is also evident from the method of making a hair bundle, which is described in the specification beginning on page 12 at line 22. As described there, melted thermoplastic glue, which is in a fluid state, coats rotating cylinder **86**, so that a fresh, hot film of melted thermoplastic glue **88** coats a non-submerged portion of rotating cylinder **86**. On page 7 at line 4, the glue is described as being in a fluid state when it is between 160° C. and 180° C.

Next, a plurality of strands of supplemental hair is touched to the film of melted thermoplastic glue **88**. Since the glue is in a fluid state, it would flow between strands of supplemental hair. The description continues by teaching that some rotation of the bunch helps to coat the strands more evenly, which would further distribute the hot melted glue in a fluid state around and between the strands of supplemental hair.

The object of making the supplemental hair bundle is to keep the plurality of strands together as they are manufactured, packaged, and

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handled by a hairstylist prior to gluing the bundle to a customer's hair. If the hair bundle was made with some strands of hair not coated with thermoplastic glue, some of the strands may come apart from the bundle, which would frustrate the purpose of creating a glued portion 30 and gluing the supplemental hair strands together. For example, if thermoplastic glue only surrounded the outside of the bundle, strands in the center of the bundle may come loose and slide out of the bundle, which would make it difficult to handle the bundle and create a new hairstyle with the supplemental hair.

Furthermore, in the disclosure of the method of making the bundle there is no teaching or suggestion to keep the melted glue from completely coating all the strands in the supplemental bundle. And, quite to the contrary, the specification on page 12 at line 8 recommends that the freshly glued bundle be finished by the operator making the bundle by using his or her fingertips to knead and manipulate the glued portion into a more cylindrical shape with a smooth surface. This may be done by rolling the glued portion between fingertips, which would shape the bundle and more evenly distribute the glue among and in between the strands of supplemental hair.

### **CLAIM REJECTIONS UNDER 35 U.S.C. § 112, Second Paragraph**

Claims 1-13 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as his invention. In so far as this rejection is applied to the claims as amended, this rejection is respectfully traversed.

In response to this rejection, claim 1 has been amended, and now includes the limitation "wherein thermoplastic glue between the supplemental

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hair strands is fused." This amendment corrects the problem with the antecedent basis, and therefore Applicant respectfully requests the withdrawal of this rejection.

### **CLAIM REJECTIONS UNDER 35 U.S.C. § 102(b)**

Claims 1-2, 6 and 10-12 stand rejected under 35 U.S.C. §102(b) as being anticipated by Barrington (U.S. 5,107,867). This rejection is respectfully traversed.

While Barrington discloses a method of attaching supplemental hair to natural human hair, Barrington does not disclose fusing thermoplastic glue between supplemental hair strands to change the glued portion from a solidified state to a workable viscosity. Instead, Barrington teaches the use of hair plug **22** that is formed with two different kinds of adhesive: a thermostable adhesive **16** that does not melt holds the bundle of hair strands together, and a thermosetting adhesive **24** that does melt coats the outside of the bundle for melting and gluing to growing human hair. As shown in **Fig. 2** of Barrington, strands of supplemental hair **10** are gathered together at end **14** and a thermostable adhesive **16** is applied from applicator **18**, thereby coating and impregnating strands of supplemental hair **10** at end **14**. Thermostable adhesive **16** is a heat resistant, air drying adhesive such as cyanoacrylate. Thermostable adhesive **16** cures and hardens into tip **20**, thereby forming supplemental hair plug **22**, which has thermostable adhesive **16** between and around the supplemental hair strands.

As shown in **Fig. 3** of Barrington, after thermostable adhesive **16** hardens, it is coated with melted thermosetting adhesive **24**, which is applied from applicator **26**. Thermosetting adhesive **24** can be any thermosetting natural or synthetic polymer adhesive, such as Thermogrip® brand hobby

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type hot melt glue, which is water repellant. Thermosetting adhesive **24** is then allowed to cool and harden.

Since thermostable adhesive **16** is applied first, and coats and impregnates strands of supplemental hair **10** at end **14**, thermosetting adhesive **24** cannot be "between supplemental hair strands."

The center of supplemental hair plug **22** is held together with thermostable adhesive **16**, which does not liquefy when heated. (See column 4, at lines 46-50.) Since the glue in hair plug **22** does not melt, the strands of supplemental hair are fixed in place with respect to one another, and the glued portion of the plug cannot be distorted, nor can it have fused glue between supplemental hair strands which is forced to contact and mix with strands of human hair as the supplemental hair is attached to natural human hair, as claimed in claim 1.

In contrast, the present invention uses a supplemental hair bundle wherein a plurality of supplemental hair strands are glued to one another at a glued portion by thermoplastic glue, wherein the thermoplastic glue is located between supplemental hair strands. This thermoplastic glue fuses (which means it changes from a solidified state to a workable viscosity) and the glued portion is distorted and fused glue is forced to contact and mix with strands of human hair as the supplemental hair bundle is applied. Applicant's invention is distinguished from Barrington by the use of thermoplastic glue to glue supplemental hair strands to one another, rather than the use of thermostable adhesive used in Barrington to glue supplemental hair strands.

In support of this Section 102 rejection, the Examiner cites Barrington at column 3, lines 62-68, and column 4, lines 1-10, to support the proposition that the supplemental hair strands in Barrington are "glued to one another at a glued portion by thermoplastic glue." Applicant respectfully disagrees with this interpretation of the teaching of Barrington. Barrington

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clearly states in column 3, at lines 62-68 that supplemental hair plug **22** is formed by gluing strands of supplemental hair **10** together at end **14** by applying a thermostable adhesive **16** from applicator **18** to coat and impregnate strands of supplemental hair **10** at end **14**. The presence of thermostable adhesive **16** that coats and impregnates the strands of supplemental hair **10** precludes gluing the strands to one another with thermoplastic glue. Once the thermostable adhesive solidifies, thermoplastic glue cannot penetrate between the strands of supplemental hair, which are encased in thermostable adhesive. While Barrington does use a coating of thermoplastic glue around the solid core of supplemental hair glued together with thermostable adhesive, Barrington certainly does not teach gluing strands together with thermoplastic glue.

Additionally, Barrington does not teach, show, or suggest the distortion of the glued portion to force fused glue to contact and mix with the plurality of strands of human hair, as claimed in Applicant's claim 1. The glued portion of the central core of supplemental hair plug **22** in Barrington will not distort because it is glued together by thermostable adhesive **16** that does not liquefy or fuse as it is heated. As described in column 4, at lines 46-50, tip **20** does not flatten, but retains a cylindrical shape as heat shrink tubing **30** shrinks. Note also that Barrington teaches that the thermosetting adhesive **24** liquefies and flows inside heat shrinkable tubing **30** to saturate and seal the junction of supplemental hair plug **22** and natural hair **12**, which means that the shrinking of tubing **30** provides the force to mix thermosetting adhesive **24** and natural hair **12**.

The fact that the supplemental hair strands of the present invention are glued together with thermoplastic glue is important because they provide a more secure attachment with less effort and time spent by the hair stylist. The more secure attachment comes from the mixing of fused glue, supplemental hair strands, and growing hair strands as the glue fuses and

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flows among all hair strands to increase the total surface area coated by thermoplastic glue. As the surface area of the glued joint increases, the strength of the bond increases.

In Barrington, the maximum area of contact between natural hair and supplemental hair is limited to the area on the outside surface of the cylindrical shape of supplemental hair plug 22. The solid core of supplemental hair strands is not allowed to mix with fused thermoplastic glue, which restricts the binding surface area to the surface of the cylindrical plug of thermostable adhesive 16. In fact, Barrington teaches that the additional support of heat shrinkable tubing 30 is needed for extra strength in the joint between hair plug 22 and the natural hair 12. Applying heat shrinkable tubing to the joint requires more time and effort from the hair stylist, which is a significant disadvantage of Barrington.

For these reasons, Applicant respectfully request that this Section 102 rejection be withdrawn.

### **CLAIM REJECTIONS UNDER 35 U.S.C. § 103**

Claims 3-5, 7-8, 13, 17-19, and 21-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barrington (U.S. 5,107,867) in view of Undin (U.S. 4,048,877). This rejection is respectfully traversed.

Undin '877 discloses a tool with two handles and two working jaws and a pivot mechanism that produces a variable force transmission ratio between the handles and the working jaws. Thus, the problem solved by Undin is providing a way to change the leverage of a mechanical tool over the range of movement of the handles of the tool. For example, as handles are moved together about a pivot, jaws of the tool move with greater force and over a smaller distance, thus changing the force transmission ratio over the motion of the handles. As a constant force is applied to the tool handles the force at

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the jaws as they are nearly closed is greater than the force applied as the jaws are beginning to close. This type of tool is well suited for bending metal, such as crimping a wire connector, where the initial bending force may be small and the final bending force needs to be much larger. The example used in the Undin disclosure is a crimping tool, which uses a smaller force for the initial deformation of a crimping barrel, and a larger force for the final stage of crimping where the barrel is tightly pressed towards the end of a cable to establish a reliable electrical and mechanical connection.

In rejecting a patent application during examination, a combination of elements from non-analogous sources, in a manner that reconstructs an applicant's invention only with the benefit of hindsight, is insufficient to present a prima facie case of obviousness. There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself.

In resolving the question of obviousness under 35 U.S.C. §103, the law presumes full knowledge by the inventor of all the prior art in the field of his or her endeavor. However, with regard to prior art outside the field of the endeavor, the law only presumes knowledge from those arts reasonably pertinent to the particular problem with which the inventor was involved. The rationale behind this rule precluding rejections based on combinations of teachings from references from non-analogous arts is the realization that an inventor could not possibly be aware of every teaching in every art.

The determination that a reference is from a non-analogous art is therefore two-fold. It is first determined whether the reference is within the field of the inventor's endeavor. If it is not, it should be determined whether or not the reference is reasonably pertinent to the particular problem with which the inventor was involved.



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In the present application, the inventor's endeavor is in the field of hair styling, and more specifically in the field of adhering supplemental hair to natural human hair. This endeavor requires the selective application of a controlled amount of heat and the manipulation of supplemental hair, human hair, and fused glue using very little force to distort and knead a glued portion of a supplemental hair bundle.

In contrast, Undin's field of endeavor is mechanical tools for applying a large amount of force to a working jaw to bend, crimp, cut, or otherwise mechanically manipulate a work piece with great physical force. Therefore, there is a difference in the field of the inventor's endeavor. There is a difference between making tools with great mechanical advantage for bending and shaping metal, which have no heating element, and the making and use of a tool that is heated to fuse glue, and that is shaped to adhere supplemental hair to natural human hair by using small kneading and mixing forces.

After finding that there is a difference in the field of endeavor, the next question is whether the Undin reference is reasonably pertinent to heating and kneading fused glue in a supplemental hair bundle. Since there is no need to apply high levels of force in order to mix and knead fused glue, and because there is no need for a variable mechanical advantage when the jaws of the fusion iron are opened and closed, and because Undin does not have anything to do with applying a controlled level of heat, Applicant submits that the Undin reference is not reasonably pertinent to the problems involved in the present application.

Furthermore, the variable mechanical advantage of Undin would be a disadvantage in kneading fused glue because the handles of Undin must be moved a greater distance as the jaws come closer together. This would be tiring to a hairstylist because it would require the stylist to open and close his or her hand through a greater range of motion, particularly during kneading

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when the jaws are close together and the kneading motion is accomplished over a small distance, with a small gap between the jaws. It would be easier for the stylist to open and closed his or her hand over a shorter distance as the stylist receives the supplemental hair bundle into the heating jaw and closes the kneading jaw to apply a small force that insures contact with the heating element, and further applies a kneading and mixing action as the glue fuses. This motion is well suited for a linear action in the tool, rather than a non-linear action that supplies varying amounts of force wherein the jaws close at a different rate depending on the position of the jaws.

Undin's teachings are related to heavy and bulky tools for applying a great force with strong working jaws. These heavy tools are hard to manipulate with any degree of precision or safety near a person's scalp. Heavy tools are hard to hold with one hand for long periods of time, such as the amount of time required to attach many hair extension bundles. An accidental slip by a stylist using such a heavy tool could bruise or otherwise injure a customer's scalp. Thus, Undin's weight and bulk are additional reasons a person skilled in the art would not look to the teachings of Undin to perform a delicate task near a person's scalp, which task is best suited for a light, easily manipulated tool.

Therefore, Applicant submits that the Undin reference is not reasonably pertinent to the particular problems solved by Applicant's Invention. Undin would not logically have come to the Inventor's attention in considering the problem of fusing and kneading glue in a supplemental hair bundle. Undin does not have the same purpose as the claimed invention; Undin's purpose is to provide a great deal of force to the working jaws of a tool, and accordingly, Applicant would have had less motivation or occasion to consider it. Accordingly, it does not seem likely that one seeking a solution to the problem confronting Applicant would turn to the art of heavy, bulky, tools that use powerful forces to bend or cut materials such as metal. Such tools

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are simply too remote from Applicant's method and apparatus to be properly used in a rejection of Applicant's claims. Moreover, incorporating Undin into Barrington would add unnecessary cost and complexity to the design, and would reduce a hair stylist's control over the small and dexterous movements of the supplemental hair applicator of the present invention.

Applicant further submits that the shape of the supplemental hair applicator disclosed and claimed in the present application is not obvious because, in addition to Undin being non-analogous art, Barrington does not teach, suggest, or motivate one of ordinary skill in the art to use a particular shape for the applicator, which is commonly referred to as a fusion iron. As far as Barrington is concerned, the shape of the applicator is irrelevant. In column 4 at lines 38-41, Barrington discloses that a hair flat iron **34** or other heat source may be used to apply heat to heat shrinkable tubing **30**. The reason the shape of the heat source is not important is because the thermostable adhesive **16** does not melt—it maintains its shape and “does not flatten, but retains a cylindrical shape when [the heat shrink tubing] shrinks.” (see column 4 at line 49) Barrington uses whatever heat source is available, such as a flat iron for straightening hair.

In contrast, Applicant's invention discloses a new shape for a fusion iron, which includes specialized jaws adapted to apply heat and a kneading force for mixing fused glue. As claimed in claim 17, the specialized jaws include a “heated jaw” and a “kneading jaw.” The heating jaw has a heating channel recessed in an inside surface of the jaw for receiving and applying heat to the bundle of supplemental hair. The kneading jaw has a kneading ridge that extends into the heating channel as the jaws are closed. Dependent claim 19 specifies that the heating channel length is about 0.5 inches, which is about the length of the glued portion **30** of the supplemental hair bundle **20**. In Barrington there is no heating channel, and the length of the flat heating element is at least twice the length of hair plug **22**. Hair flat

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iron is also very wide, which makes it difficult to handle and selectively apply heat close to a client's scalp without burning either the client or the stylist.

While the heating jaws in Barrington are too large, in both length and width, the jaws in Undln may be too small, as there is no disclosure of the importance of the channel length because the invention is focused on the variable force transmission of the pivot mechanism, not the shape of the jaws. With regard to the present invention, the shape and the length of the heating channel are disclosed, and the importance of the relationship between the shape of the glued portion of the hair bundle and the shape of the heating channel is disclosed. These shapes, and the relationship between these shapes, significantly contributes to the advantages of applicant's invention, and are not taught or suggested in the prior art.

For the reasons set forth above, Applicant respectfully requests that the Examiner withdraw this section 103 rejection.

### **DOUBLE PATENTING**

Claims 1-13 and 17-24 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,820,625.

In response to this double patenting rejection, Applicant will submit a terminal disclaimer to obviate the double patenting rejection over a prior patent upon the resolution of the patentability of the claims, or sooner.

### **CONCLUSION**

For the reasons stated above, and in view of the amendments, Applicant respectfully submits that the application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested.

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Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

If the Examiner believes that any remaining issue of patentability might be expeditiously resolved in a telephone conference, the Examiner is invited to call Applicant's attorney at the telephone number below.

No additional fee is deemed required. However, if an additional fee is required, the Commissioner is hereby authorized to charge additional fees which may be required for this Amendment, or credit any over payment, to Deposit Account Number 23-2770. If any extension of time is required, such extension is hereby requested. Please charge any additional required fee for such extension of time to Deposit Account Number 23-2770.

Respectfully submitted,



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L. Bruce Terry, Reg. No. 38,336  
Decker, Jones, McMackin, McClane, Hall & Bates, P.C.  
Burnett Plaza, Unit #46  
801 Cherry Street, Suite 2000  
Fort Worth, Texas 76102-6836  
Tel.: 817.336.2400, Fax: 817.336.2181  
Attorney For Applicant